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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/698,186	10/30/2000	Kosuke Inoue	500.39252X00	3559

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EXAMINER

OWENS, DOUGLAS W

ART UNIT PAPER NUMBER

2811

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/698,186

Applicant(s)

INOUE ET AL.

Examiner

Douglas W Owens

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-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39 - 67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 02 May 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16, 17.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on May 2, 2003 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.185(a). Failure to take corrective action within the set (or extended) period will result in **ABANDONMENT** of the application.

Claim Objections

2. Claim 67 is objected to because of the following informalities: The claim recites the limitation, "...forming said electrically insulating layer by printing said electrically insulating material" in lines 17 and 18. The claim also recites the limitation, "...forming an electrically insulating layer...by printing an electrically insulating material..." in lines 2 – 3. It appears that the same limitation is cited twice in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 39 – 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 39, 53, 65, 66 and 67, the intended limitations of the first step are vague because of at least the following reasons; the comma use is confusing; it is not clear if electrically insulating layer and the electrically insulating material are the same layer; the language, "...printing an electrically insulating layer including particles therein by use of a mask..." is confusing. The claims do not clearly recite where the wiring is formed in the second step. What remains exposed? What is provided on the wafer; is it the insulating layer or the part of a circuit electrode? Does the Applicant intend to claim that the wire extends to both the inclined portion and the flat portion?

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Does it extend beyond the flat portion to the inclined portion? If it the Applicant's intention to claim that the wire extends to the inclined portion and the flat portion, it is suggested that --extending-- be inserted between "area" and "from". Also, how does the wire extend to both the flat portion and the inclined portion? Does it extend beyond one of the portions?

Claim 65 further recites the limitation, "...forming a first electrically insulating layer exposing at least a part of a circuit electrode of a wafer thereon..." The scope of the claim is not clear. The language, "...a circuit electrode of a wafer thereon..." seems to indicate that the wafer is disposed on the circuit electrode instead of the electrode being disposed on the wafer.

Regarding claims 41 and 55, the scope of the claims are nebulous. It appears that the Applicant is claiming that the *insulating material* has particles of *the insulating material* inside of it. Is the Applicant's intention to claim that the insulating material contains particles of the insulating material? This is nonsensical. Also, are the insulating layer and the insulating material part of the same layer?

Claim 46 requires that the thickness of the insulating layer is $1/20$ to $1/5$ as large as the thickness of the semiconductor device. The scope of this limitation is vague, since the meaning of the thickness of the semiconductor device cannot be reasonably ascertained from the claimed process. The boundaries defining the semiconductor device are not known. Is the thickness measured from the bottom of the wafer or from the bottom of the first element formed on the wafer?

Claims 47 and 59 require that the insulating layer be formed with an incline that has a gradient with respect to a principal surface of the semiconductor device. The scope of the claim is vague because the semiconductor device has many principal surfaces on different elements of the device. Is this a principle surface of the electrically insulating layer, the electrically insulating material, the wiring or the external connection, all of which comprise the semiconductor device? Should "semiconductor device" be replaced with "wafer" or "insulating layer" in line 5 of the claim?

Claims 48, 49 and 61 require that the electrically insulating material be used to form the electrically insulating layer. The scope of the limitation is not clear because it is not clear how the electrically insulating material is used. Is the electrically insulating material used as a mask, or does the electrically insulating layer comprise the electrically insulating material.

Claim 50 recites the limitation, "...a squeegee is moved over an opposite vertex of an opening portion..." It is not understood what is meant by "an opposite vertex". Opposite with respect to what feature of the opening? Does the opening have two high points or is it in the shape of two triangles? Claims 66 and 67 recite similar limitations.

Claims 52 and 64 require that the mask opening is smaller than a region covered by the insulating layer. It is not understood how the opening of the mask can be smaller than the pattern formed on the wafer. The pattern formed is normally smaller than the mask opening.

Claim 65 recites the limitation, "...forming a first electrically insulating layer exposing at least a part of a circuit electrode of a wafer thereon..." The scope of the

claim is not clear. The language, "...a circuit electrode of a wafer thereon..." seems to indicate that the wafer is disposed on the circuit electrode instead of the electrode being disposed on the wafer.

Response to Arguments

5. Applicant's arguments with respect to new claims 39 – 67 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

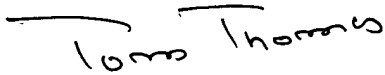
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO
June 11, 2003


TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800